

**A NEW COLEOPTEROID LETHAEINE FROM SOUTHERN
SOUTH AMERICA (HEMIPTERA: LYGAEIDAE:
RHYPAROCHROMINAE)**

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Abstract.—*Stictolethaeus slateri*, new genus, n. sp., is described from Argentina and Uruguay. A new type of sexual dimorphism suggests male pheromone production. Coleopteroid forewings and the lack of hind wings apparently preclude flight.

The monotypic genus described below was discovered in the course of revisionary work on Western Hemisphere Lethaeini (Hemiptera: Lygaeidae: Rhyparochrominae) (O'Donnell, 1986). It exhibits several distinctive morphological features, including a highly modified forewing, unique genitalia, and unusual sexual dimorphism. Although this interesting new bug is clearly a member of the Lethaeini, the tribal concept must be broadened to include it.

MATERIALS AND METHODS

Specimens were borrowed from the institutions or personal collections listed in the Acknowledgments. Names of colors follow Smithe (1975). Standard procedures for dissection of genitalia and measurement of specimens were used. All measurements are in mm. Measurements of a paratype female (on the same pin as the holotype) are given in parentheses following those of the holotype in the species description. Locality data, etc. are given exactly as they appear on the labels.

For scanning electron microscopy, specimens were soaked overnight in relaxing fluid, dissected, and allowed to air-dry for several hours. They were then mounted on an aluminum stub with conductive wax, sputter-coated with gold for 4.5 minutes in a Polaron® sputter-coater, and examined with a Coates and Welter® Field Emission Scanning Electron Microscope. Photographs were taken at approximately 20 kv accelerating voltage, with a Polaroid camera at f6 for 16 seconds, using Polaroid PolaPlan 4 × 5 Land Film Type 52® processed according to manufacturer's directions.

***Stictolethaeus*, new genus**

Description. Body broadly oval. Dorsal surface very finely rugulose, conspicuously punctate. Head with 2 basal iridescent areas composed of ridges 2 μ m apart (Figs. 2, 4). Hemelytron coleopteroid, with no trace of membrane. Hind wing lacking. Fore femur lacking short, stout, distal spines beneath. Dorsal margin of metathoracic scent gland evaporative area with a deep notch (Fig. 3). Dorsum of abdomen sexually dimorphic (Figs. 6–9). Terminal abdominal terga of female fused, with tergum 8 entire (Fig. 16). Clasper (Fig. 13) conventional. Sperm reservoir (Fig. 14) unique.

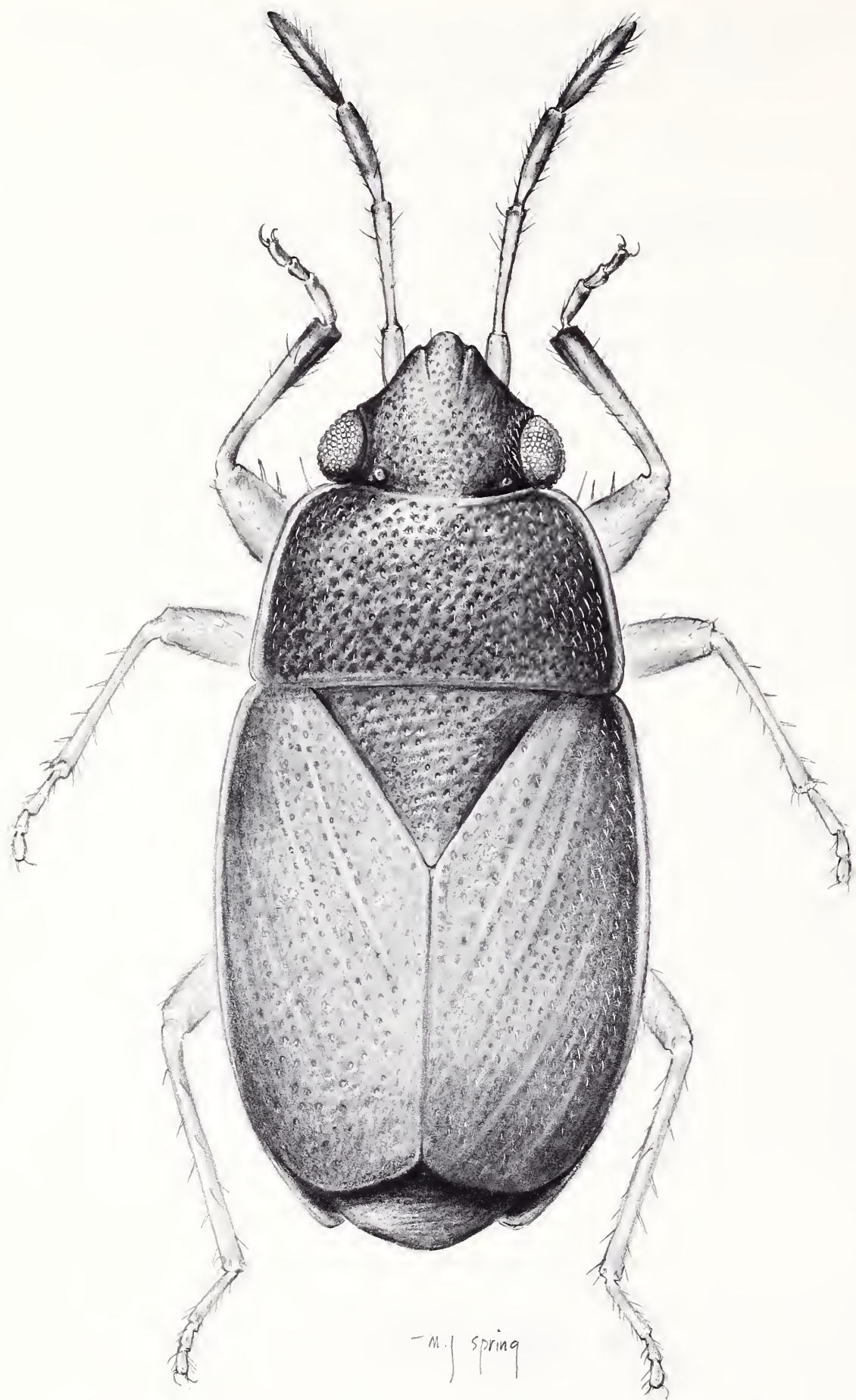


Fig. 1. Dorsal view, holotype of *Stictolethaeus slateri*, new genus, n. sp.

Spermatheca (Fig. 15) with only proximal flange apparent, and an asymmetrical sclerite between bulb and flange. Nymph with canals of scent glands 3–4 and 4–5 converging just laterad of gland openings, then diverging again (Fig. 10); tergum 4 of nymph reduced and partially fused with tergum 5 (Fig. 10).

Type species. *Stictolethaeus slateri*, n. sp.

Etymology. This genus takes its name from the Latin *sticto*-, meaning punctate, in reference to its heavily punctate dorsal surface, in combination with *Lethaeus*, for the type genus of the tribe.

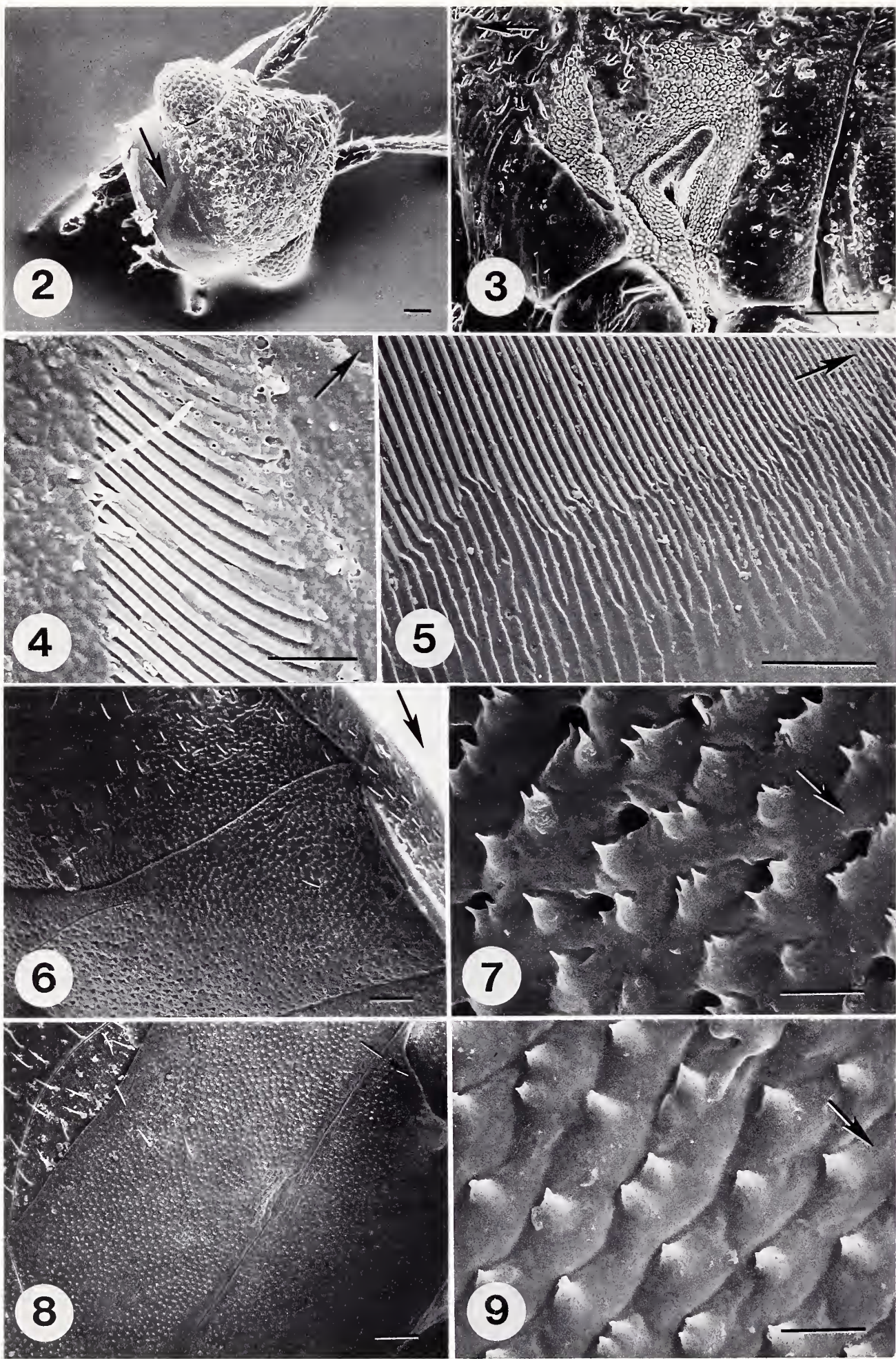
***Stictolethaeus slateri*, new species**

Description. Small, total length 2.70 (3.30); broadly oval, maximum width 1.30 (1.53). Subshining, with a very fine, hexagonal rugosity overall. Dorsum entirely and evenly punctate, with short decumbent hairs (Fig. 1).

Coloration: Dorsal and ventral surfaces uniformly cinnamon-rufous, except for buff-yellow lateral pronotal and corial margins. Legs, first two antennal segments and proximal $\frac{1}{3}$ of third antennal segment dark buff-yellow. Distal $\frac{2}{3}$ of third segment and all of fourth contrastingly tawny. Extreme distal end of second antennal segment geranium red; exposed areas of terminal abdominal connexiva also tinged with geranium red.

Head: Vertex moderately swollen, with two rigid iridescent spots (Figs. 2, 4); ocelli present; jugum concave. Length head 0.48 (0.52); preocular length 0.25 (0.28); width head 0.72 (0.82); interocular width 0.42 (0.40). First antennal segment barely exceeding tylus, armed with stout hairs along inner surface; second antennal segment terete; third and fourth fusiform; distal half of second segment and all of third and fourth segments with upstanding hairs, longer than the diameter of segment, in addition to decumbent pubescence. Antenniferous tubercles unmodified. Length antennal segment I 0.22 (0.25); II 0.35 (0.40); III 0.28 (0.32); IV 0.40 (0.42). Venter of head very slightly swollen. Labium barely reaching mesocoxae, first segment not reaching base of head. Length labial segment I 0.35 (0.38); II 0.30 (0.35); III 0.22 (0.28); IV 0.25 (0.28).

Thorax: Pronotum with anterior and posterior margins shallowly concave; lateral margins explanate, only very slightly sinuate. Trichobothria level with anterior pronotal margin at meson. Pronotum not distinctly divided into anterior and posterior lobes. No collar, transverse impression or longitudinal furrow. Humeri not prominent or raised. Length pronotum 0.55 (0.60); posterior width 1.08 (1.25); width across trichobothria 0.75 (0.92). Scutellum broad, flat. Length 0.52 (0.60); width 0.70 (0.82). Hemelytron coleopteroid, truncate, covering all but terga 7 and 8 dorsally. Corial fracture laterad of R + M, extending $\frac{5}{6}$ length of corium. Length corium along midline 0.85 (1.00). Legs short, stubby; fore femur most strongly swollen, armed below with a row of long hair-spines proximally, but no short, stout spines distally. Mid and hind femora armed below with a row of spines not quite as long as tibial spines. Fore tibia with reduced number of spines; mid and hind tibiae spinose. Metathoracic scent gland (Fig. 3) with ostiolar peritreme raised and sharply angled posteriorly. Evaporative area covering all of mesepimeron, extending dorsally along meso-metapleural junction to same level as evaporative area on metapleuron. Evaporative area covering ventral $\frac{4}{5}$ of metapleuron; dorsal margin with broad notch anteriorly, almost reaching peritreme; postero-dorsal corner sharply curved.



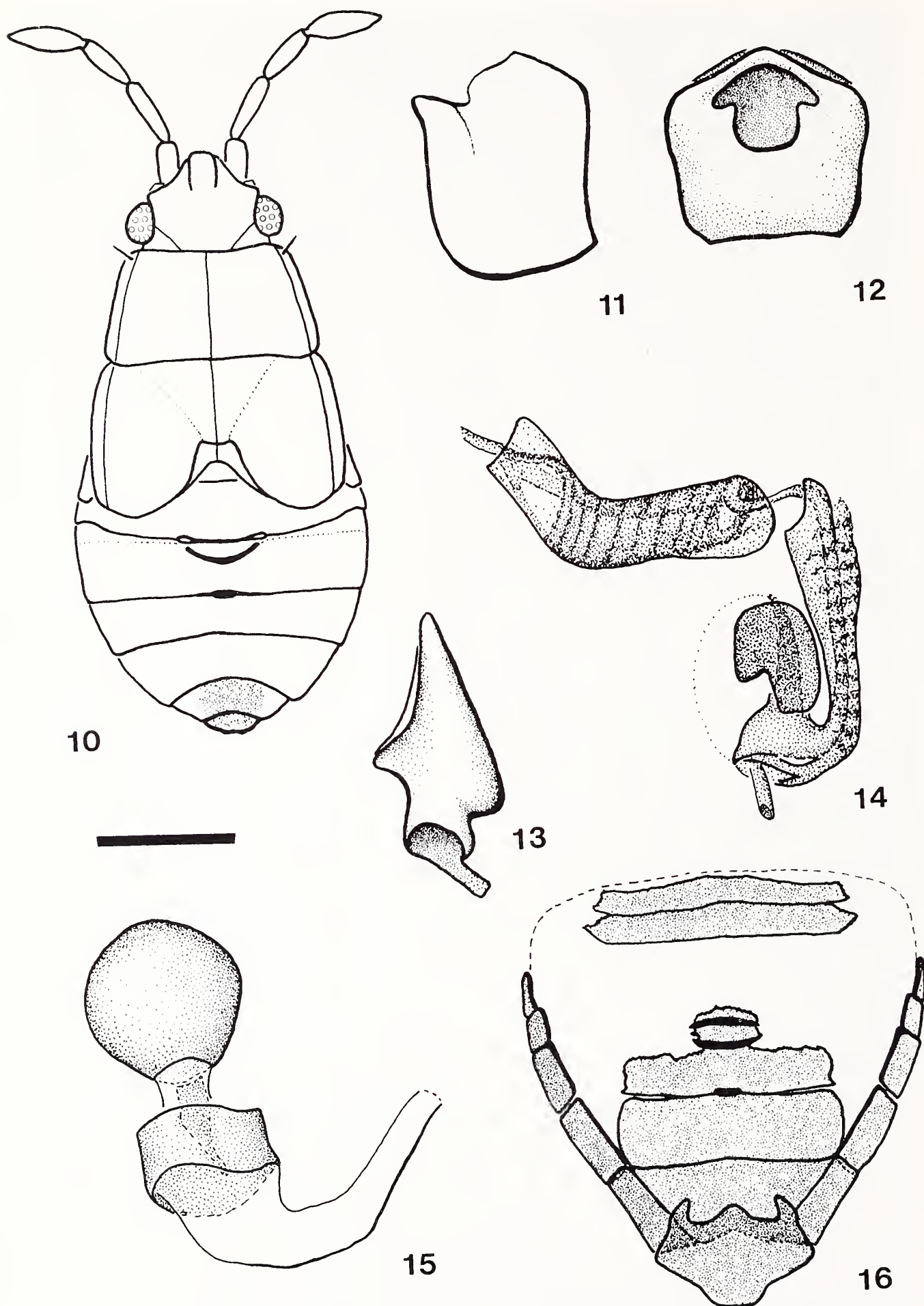
Abdomen: 4–5 sternal suture not reaching 3–4 sternal suture. Spiracle 5 almost directly above middle trichobothrium of segment 5. (From paratypes) innerlaterotergites absent; scent gland scars between terga 3–4 and 4–5 converging and then separating again. Tergum 4 consequently very reduced, partially fused with tergum 5. Anterior abdominal terga of female almost entirely desclerotized (Fig. 16); cuticle of terga 6 and 7 modified, with flat, triangular, posteriorly-directed projections (Figs. 8, 9). Corresponding area of male abdomen typically sclerotized but perforated by numerous pores (Figs. 6, 7). Female with eighth tergum entire, uniquely shaped (Fig. 16). Male genitalia: clasper with broad, thumb-like inner projection (Fig. 13); sperm reservoir (Fig. 14) complex, shape unique for the tribe, with vesical seminal duct tightly coiled within sclerotized cylinder of vesica. Female genitalia: spermatheca (Fig. 15) with spherical bulb; proximal flange only present; asymmetrical sclerite present between bulb and flange.

Holotype. ♂ ARGENTINA, Pcia. Bs. As., Tandil, III-1963; Collection Dr. Carpintero, Argentina. Deposited in AMNH.

Paratypes (101♂♂, 134 ♀♀). ARGENTINA: 1♀, carded separately but on same pin as holotype; 1♂, 1♀ same data as holotype (carded separately, on same pin); 2♂♂, PBA Puntalara, XII-73; 1♂, Pcia. Bs. As., Otamendi, XI-1964; 2♂♂, Córdoba, Arias, VIII-1966, (carded separately, on same pin); 1♂, 1♀, Isla Tinbo (?) Santa Fe, XI-1971, (carded separately, on same pin); 1♂, Córdoba, V. Hermosa, III-1965, (carded separately, on same pin as a nymph, which is not a paratype); 1♂, Pcia. Bs. As., P. Iraola, II-1970, (carded); 1♂, 2♀♀ same data, (carded separately, on same pin); 2♂♂, same except II-1976, (carded separately, on same pin). All of the above specimens also bear an additional label: Coleccion Dr. Carpintero, Argentina. URUGUAY: 3♂♂, 10♀♀, Montevideo, VI-30-1967, Collectors L. and C. W. O'Brien; 1♀, Catamarca, El Suncho, II-1937, R. Goldbach; 19♂♂, 20♀♀, 1?, Montevideo, FDR Parque, 19 Sept. 1981, U-11, M.H. Sweet and P. Wilkinson; 3♂♂, 2♀♀, Montevideo, Beach W side of FDR Parque, 12 Oct 1981, U-17, M. H. Sweet and T. Stephens; 2♂♂ same except U-17B; 1♂, 3♀♀, Montevideo, FDR Parque, U-8B, 22 Nov 1981, M. H. Sweet; 1♂, 3♀♀, Montevideo, FDR Parque, U-5, 15 Sept 1981, M. H. Sweet and P. Wilkinson; 6♂♂, 5♀♀, Montevideo, near Airport, U-14, 10 Oct 1981, M. H. Sweet; 19♂♂, 36♀♀, Montevideo, FDR Parque, U-6, 16–19 Sept 1981, M. H. Sweet, T. Stephens and P. Wilkinson; 22♂♂, 23♀♀, Montevideo, FDR Parque, U-8, 18 & 20 Sept 1981, M. H.

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Figs. 2–9. Scanning electron micrographs. 2. Head of *Stictolethaeus slateri*, dorsal view, low magnification, with arrow showing iridescent spot. Scale bar = 50 µm. 3. *Stictolethaeus slateri*, metathoracic scent gland and surrounding evaporative area. Scale bar = 50 µm. 4. *Stictolethaeus slateri*, dorsal view of head, close-up of iridescent spot. Scale bar = 10 µm. 5. *Bubaces* sp., dorsal view of head, close-up of iridescent spot. Scale bar = 20 µm. 6. *Stictolethaeus slateri*, abdomen of male, dorsal view, low magnification. Arrow indicates anterior. Scale bar = 20 µm. 7. Same: fifth abdominal tergite of male, dorsal view, high magnification. Arrow indicates anterior. Note presence of pores (one at arrow). Scale bar = 10 µm. 8. *Stictolethaeus slateri*, abdomen of female, dorsal view, low magnification. Arrow indicates anterior. Scale bar = 20 µm. 9. Same, fifth abdominal tergite of female, dorsal view, high magnification. Arrow indicates anterior. Note absence of pores. Scale bar = 10 µm.



Figs. 10–16. *Stictolethaeus slateri*. 10. Fifth instar nymph, dorsal view. Scale bar = 0.5 mm. 11. Genital capsule, lateral view. Scale bar = 0.25 mm. 12. Genital capsule, dorsal view. Scale

Sweet, T. Stephens and P. Wilkinson; 1♀, Montevideo, FDR Parque, U-21, 28–29 Sept 1981, M. H. Sweet and T. Stephens; 1♀, Piriapolis, Cerro del Torro, 5 Oct 1981, U-23, M. H. Sweet, T. Stephens and P. Wilkinson; 2♂♂, 6♀♀, same except U-24; 8♂♂, 14♀♀, same except U-25; 1♂, 1♀, (blank) miles W of Rocha, 14 Oct 1981, U-27, M. H. Sweet; 1♀, FDR Parque, 28 Nov 1981, M. H. Sweet; 2♂♂, 2♀♀, 30 km N of Paysandu, Rio Queguay, U-32/33, M. H. Sweet. Deposited in CARP, AMNH, SWEET, JAS, and author's collections.

Etymology. Named for Dr. James A. Slater in recognition of his outstanding contributions to hemipterology.

Distribution. Argentina and Uruguay (Fig. 17).

Description of fifth instar nymph (pointed; Temperley, Argentina, Apr. 1906, R. Thaxter, AMNH) (Fig. 10): Head, pronotum, and wingpads (except laterally) chestnut. Lateral pronotal and wing pad margins buff yellow. Antennal segments I, II, and proximal two-thirds of III buff yellow. Distal end of segment III and all of segment IV cinnamon-rufous. Abdomen ground color ferruginous, marked with buff yellow as follows: lateral stripe; sublateral stripe; broken stripe just mesad of sublateral stripe; and series of dots, one per segment, midway between meson and lateral margin. Area immediately surrounding scent glands, and sclerotized plates on terga 8 and 9 cinnamon-rufous. Venter of thorax uniformly chestnut except for light buff yellow margins of meso- and metapleura. Venter of abdomen same color as dorsum. Legs cinnamon-rufous to cinnamon. Head broad, flat across vertex; with 2 basal iridescent spots composed of ridges (as in adult); jugum concave. Length head 0.42; width 0.65; interocular width 0.40. Antennal segment I fusiform, not exceeding tylus; segments II and III cylindrical, IV terete; segments II–IV covered with long upstanding hairs. Length antennal segments I 0.175; II 0.300; III 0.250; IV 0.375. Labium reaching mesocoxae. Length labial segments I 0.300; II 0.250; III 0.225; IV 0.250. Thorax: pronotum with trichobothrium at anterolateral corner; lateral margins explanate. Length pronotum 0.475; width across trichobothria 0.675; posterior width pronotum 0.925. Mesothoracic wing pad with explanate lateral margins; length mesothoracic wing pad 0.675. Abdomen with dorsal scent gland openings between abdominal terga 3–4 and 4–5 close together, with scent canals converging and nearly meeting just laterad of 3–4 scent gland opening, then diverging again; tergum 4 consequently very reduced between them (Fig. 10). Each scent gland opening surrounded by a narrow sclerite. Terga 8 and 9 with broad sclerotized plates; sterna 6 through 9 with broad mesal sclerotized plates. Length abdomen 1.10. Total body length 2.30.

Two additional nymphs were examined, each pointed on the same pin as a paratype (1 from Isla Tinbo, Santa Fe, Argentina and 1 from V. Hermosa, Cordoba, Argentina).

DISCUSSION

The placement of *Stictolethaeus* in the Lethaeini is unequivocal, since it exhibits the following characteristic tribal features (Ashlock, 1964; Slater and O'Donnell,

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bar = 0.25 mm. 13. Clasper. Scale bar = 0.1 mm. 14. Sperm reservoir, lateral view. Scale bar = 0.1 mm. 15. Spermatheca. Scale bar = 0.1 mm. 16. Abdomen of female, ventral view of tergites. Scale bar = 0.25 mm.

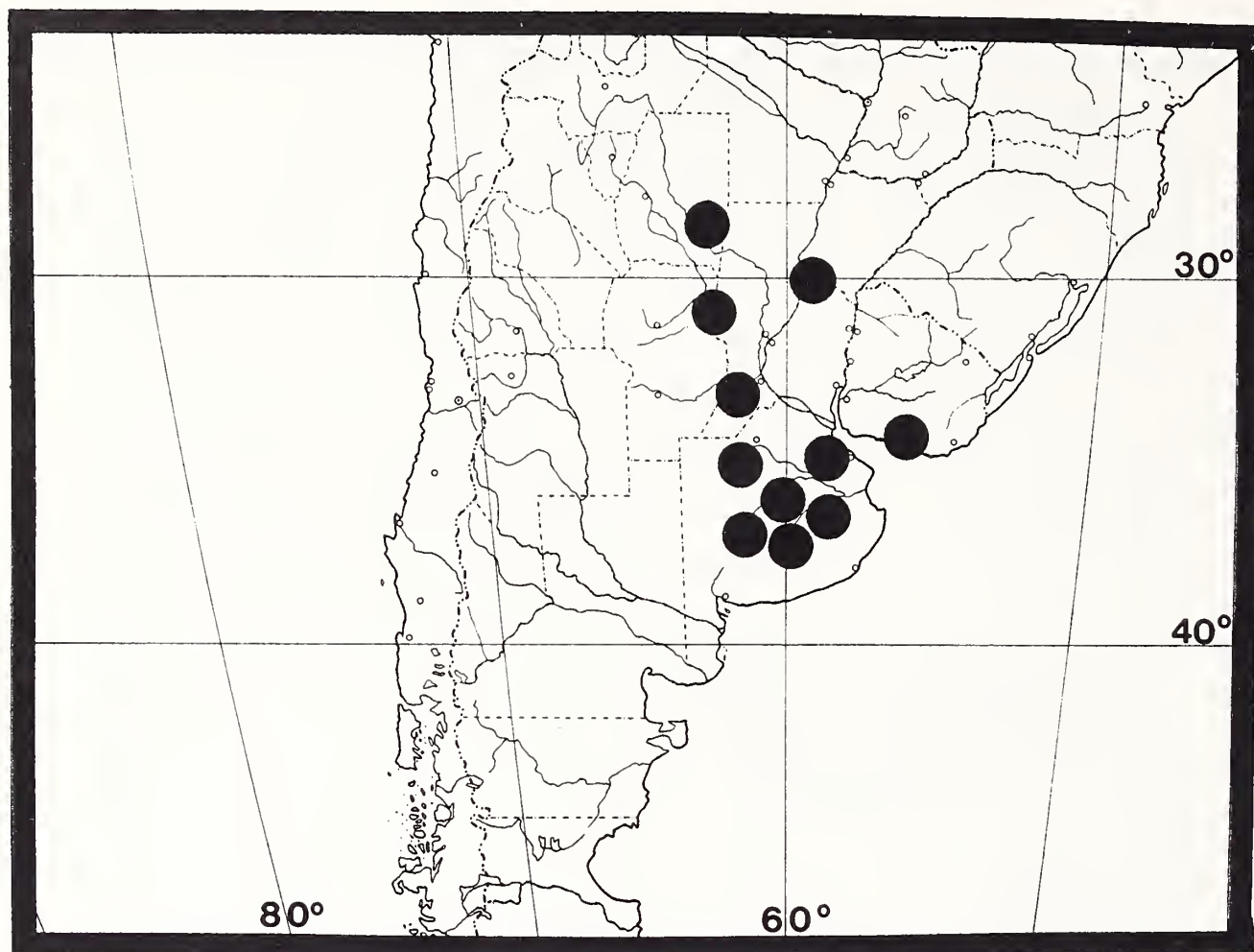


Fig. 17. Distribution of *Stictolethaeus slateri*.

1978): a rounded buccular groove joined immediately behind the labium; carinate juga; trichobothria at anterior corners of the pronotum; immatures with a reduced scent gland between abdominal terga 5 and 6; dorsum of head with iridescent areas basally; and generalized lethaeine male genital capsule and clasper.

The tribal definition must be modified, however, to include character states not usually found in the Lethaeini. Other members of the tribe have linear trichobothria on abdominal sternum 5, typically arranged with the anterior two trichobothria close together and widely separated from the third. In *Stictolethaeus slateri*, the 3 trichobothria are also linear, but almost evenly spaced. Curiously, the nymph of *Stictolethaeus slateri* has the typical lethaeine condition, possibly indicating that evenly spaced linear trichobothria are derived relative to other linear trichobothrial arrangements.

Stictolethaeus, unlike other lethaeines, does not have innerlaterotergites (Fig. 16). In their cladistic analysis of the tribes of Rhyparochrominae, Slater and Woodward (1982) did not include *Lilliputocoris* in the Lethaeini because it lacks innerlaterotergites, and erected a new, monotypic tribe for it for this reason. The loss of these structures in *Stictolethaeus* and *Lilliputocoris* may be convergent due to wing modification and accompanying changes in abdominal morphology; however, because there is a synapomorphy uniting the tribes, the tribal placement of *Lilliputocoris* should be reexamined carefully.

The affinities of *Stictolethaeus* within the Lethaeini remain enigmatic. Most Neo-

tropical lethaeines belong to a clade defined by the possession of a single dorsal iridescent spot on the head (the "one-spot clade"). *Stictolethaeus* is excluded from this group because it retains the presumed plesiomorphic condition of two iridescent head spots. Of the 6 Neotropical genera that possess two iridescent spots, *Stictolethaeus slateri* superficially resembles *Esuris terginus* Stål, which is also coleopteroid and heavily punctate. The iridescent spots of *Esuris terginus* are quite unlike those of *Stictolethaeus slateri*. In the former they are composed of a field of overlapping pegs, whereas in the latter they are composed of ridges. The only other lethaeine taxon with two iridescent head spots composed of ridges is *Bubaces* Distant, with several Neotropical species. In all species of *Bubaces*, each spot as 3 ranks of parallel ridges with profiles that appear rounded at higher magnification (Fig. 5). Each spot in *Stictolethaeus slateri*, however, is a single, crescent-shaped rank of angulate ridges (Fig. 4). Since the shape and fine structure of each spot are so different, I do not consider them homologous.

The deep notch in the dorsal margin of the metathoracic scent gland evaporative area is also found in some species of *Cryphula* Stål and an undescribed genus, both of which are members of the unrelated one-spot clade of Neotropical Lethaeini. For this reason, I assume that the notched condition has arisen more than once.

Stictolethaeus slateri also exhibits several autapomorphies. The male has a sperm reservoir unique in the Lethaeini, and nothing even vaguely like it is known elsewhere in the Rhyparochrominae (O'Donnell, 1979). The female spermatheca has an unusual, asymmetrical sclerite between the bulk and flange. The fusion and modification of the terminal abdominal segments of the female are also unlike anything previously described in the tribe. Still another autapomorphy is the sexually dimorphic adult abdomen. In the female, terga anterior to scent-gland scar 3–4 are almost entirely desclerotized (Fig. 16). In the male, the anterior terga are not as desclerotized, and all terga under the hemelytra are covered with pores that extend right through the cuticle (Figs. 6, 7). These openings suggest dermal gland ducts (Hadley, 1986), although I was unable to confirm this. The female shows no sign of these pores (Figs. 8, 9). If these pores do indeed indicate openings of ducts from dermal glands, their presence only in the male suggests an interesting function for whatever substance, presumably a pheromone, is secreted.

The nymph also shows distinctive autapomorphic characteristics. The convergent anterior dorsal abdominal scent gland canals in the nymph are especially intriguing because tergum 4 is very reduced between them, yet sternum 4 appears of normal size in both the immature and the adult. The fifth instar nymph also has two fully-developed iridescent spots on the head, of the same type as the adult. This is the first information available on the ontogeny of this structure.

All of the adult specimens examined are coleopteroid in the sense of Slater (1975). Features often associated with coleoptery, and found in *Stictolethaeus slateri*, include loss of the hind wing, desclerotization of the anterior abdominal tergites in the female and perhaps the loss of innerlaterotergites. In contrast, ocelli, which are frequently lost in coleopteroid lygaeids, are present in *Stictolethaeus slateri*. Although modified forewings are relatively common in ground-living lygaeids, coleoptery and other extreme wing forms are less common. These types of wings are usually associated with xeric or montane habitats or islands (Slater, 1977, 1985), where the degree and relative frequency of such modifications are correlated with habitat permanence

(Sweet, 1964; Slater, 1977 and references therein). It remains to be seen whether or not the lygaeid fauna of the pampa grasslands will fit these general patterns.

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